



# KIWYO

## Soy Yogurt Drink with Kiwi Flavour

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**BE REAL BE NATURAL**



# Project introduction





# Product Development



- New product defining:



- Marketing research





# Product Development



1. The newly product aims to combine the advantages of soy yogurt and kiwi .
2. The market is huge and there are similar successful products and companies.
3. The technology is available from similar products.
4. There is an increasing trend of the demand for these products with nutritious and functions.
5. The cost is estimated not too high and the selling price is available so there is profit
6. We continue to find more information and try to produce the yogurt following the clear timetable for the whole project.



# Product Strategy



House of Quality

✓ WHATs

✓ HOWs

Sensory test



# House of Quality



WHATs Attributes:

Codes	Good Taste
W1	Kiwi flavor
W2	Sweetness
W3	Milk flavor
Codes	Good texture
W4	thickness
Codes	Good appearance
W5	color
W6	Material of package
W7	Shape of package
W8	Size of package
Codes	Good function
W9	Low fat content
W10	Rich in mineral
W11	Rich in vitamins

HOWs Factors:

H1 [ $\leftarrow\rightarrow$ ] Amount of soya milk

H2 [ $\leftarrow\rightarrow$ ] Amount of cows:soy  
yoghurt

H3 [ $\leftarrow\rightarrow$ ] Amount of kiwi

H4 [ $\leftarrow\rightarrow$ ] Amount of sugar

# WHATs



levels		1	2			3
CODES	Attributes	LOW	MEDIUM			HIGH
W1	Kiwi flavor	8%	11%			15%
W2	Sweetness	4%	6%			8%
W3	Milk flavor	Soymilk/yoghurt =80/20	Soymilk/yoghurt=70/30			Soymilk/yoghurt= 60/40
W4	Thickness	Soy milk 70g	Soy milk 100g			Soy milk 130g
	levels	1	2	3	4	5
W5	Color	0%	8%	11%	15%	30%

# HOWs



HOWs			WHATs	
H1	Amount of soy milk	90ml/ 120ml/ 150ml	W1	Milk flavor
H2	Amount of cows: soy yoghurt	$\frac{40g}{160g}$ / $\frac{60g}{140g}$ / $\frac{80g}{120g}$	W4	Thickness
H3	Amount of kiwi	8 %(-) /11 %( 0)/15 %(+)	W1	Kiwi flavor
H4	Amount of sugar	4 %(-) /6 %( 0)/8 %(+)	W2	Sweetness
			W5	Color



# Sensory test



- Sensory test for WHATs
  - Sensory test for HOWs
  - New product compared with commercial products
- 
- Using 9 -point category scale
  - Results analysis in R Project
  - For achieving ideal product



# Results



- The final order of the importance for WHATs was  
 $W3(\text{Milk flavor}) > W1(\text{Kiwi flavor}) > W2(\text{Sweetness}) > W4(\text{Thickness}) > W5(\text{Color})$ .
- The final order of importance for HOWs was determined as  
 $H3(\text{Amount of kiwi}) > H2(\text{Amount of cows: soy yoghurt}) > H4(\text{Amount of sugar}) > H1(\text{Amount of soy milk})$ .
- The final product was consisted
  - 34% soy milk,
  - 45% yogurt with 2:3ratio of cows and soy yogurt
  - 15% fresh kiwi juice
  - 6% sugar.



# Processing Equipments Layout Legislation



# Processing

# Processing

UNIT  
III



LABORATORY



INDUSTRIAL





# Laboratory Processing



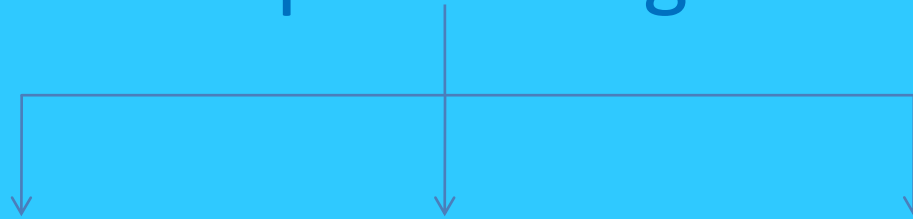
- Fermentation of cows yogurt and kiwi juice extraction carried in laboratory
- Maintenance of temperature, time and checking of acidity
- Soy yogurt – directly bought from market



# Industrial processing



## Three processing lines



Cows yogurt



Soy yogurt



Kiwi juice



# Industrial Processing



## Cows yogurt/Soy yogurt

- Receiving of cows milk/ Soy milk
- Storage
- Standardization
- Pasteurization
- Homogenization
- Inoculation with bacterial culture
- Fermentation



# Industrial Processing



## Kiwi juice

- Receiving kiwis
- Sorting
- Washing
- Drying
- Chilling
- Peeling
- Removal of middle part
- Cutting
- Juice extraction
- Filtering
- Addition of water
- Standardization
- Deaeration

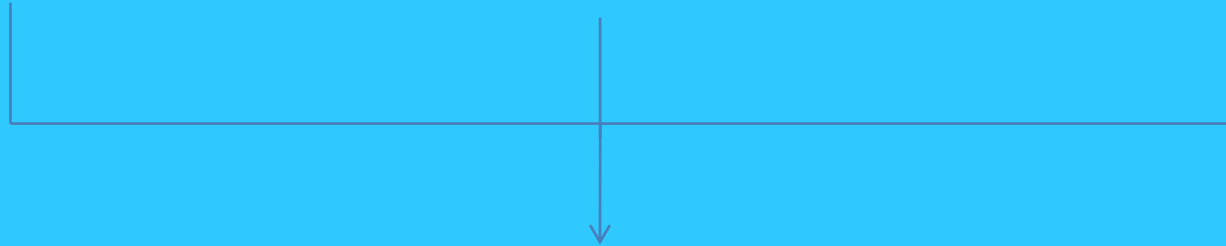
# Industrial Processing



Cows yogurt

Soy yogurt

Kiwi juice



Mixing

Checking of parameters

Homogenisation

Filling

Sealing

Labelling

Storage

Distribution







# Equipments

# Principles of selection



- Target capacity of units/day
- Time
- Processing requirement
- CIP
- GMP
- HACCP
- Cost



# Equipments



- Tanks
- Separator
- Batch pasteurizer
- Homogeniser
- Cooling system
- Filling machine
- Blender
- Deaerator
- Labelling
- CIP system





# Layout

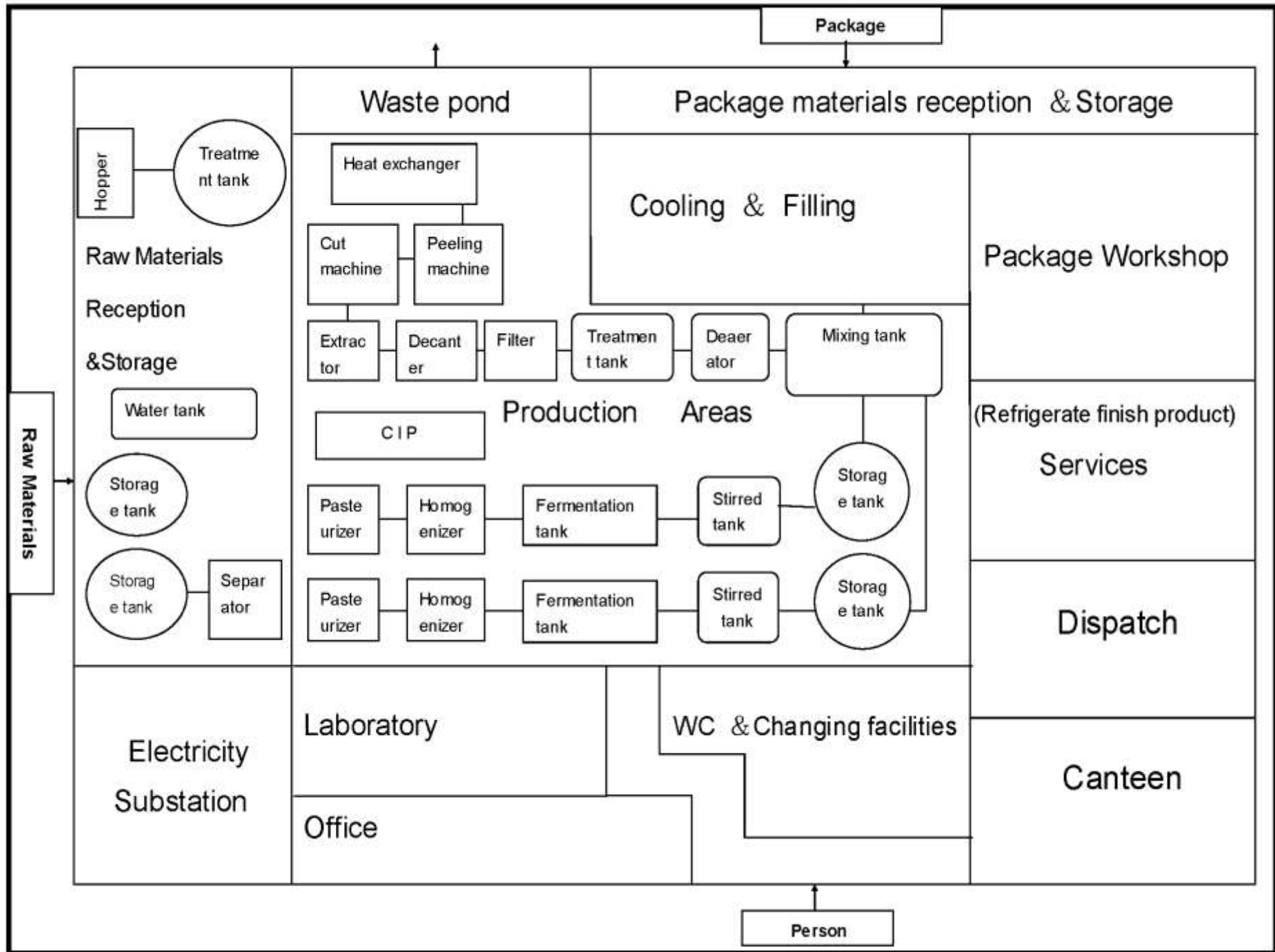
# Principles of layout



- Comply with Accreditation Standard requirements
- Legislative requirements
- Efficient utilization of resources
- Adequate spacing for equipments
- Proper storage of raw material
- Protection against pests
- Proper ventilation and lighting







# Important aspects of Layout



- All functions should be processed with no criss-crossing and backtracking
- Visitors should move from clean to unclean areas
- Ingredients should move from dirty and clean areas as they become incorporated into food products
- Conditioned air and drainage should flow from clean to dirty areas
- The flow of discarded outer packing material should not cross the flow of products
- There is sufficient space for plant operations including processing, cleaning and maintenance  
Space is also required for movement of materials and pedestrians





# Legislation

# Legislation



National and EU legislation for

- Product and Production process
- Labelling



# Legislation



- Product and Production process
  - Definition of yogurt drink
  - Amount of fruit in yogurt drink
  - Acidity
  - Amount of bacterial culture
  - Fat and protein content of final product





# Legislation



## ➤ Labelling

### Food Labelling Regulation 1996

- Name
- Ingredients
- Durability
- Special storage conditions
- Manufacture's name and address
- Place of Origin
- Additional Requirements
- Instructions

# Relevance regulation



- Food Safety Act 1990
- Trade Descriptions Act 1968
- Weights and Measures Act 1985
- Weights and Measures (Packaged Goods) Regulations 2006
  - an indication of quantity
- Food (Lot Marking) Regulations 1996
  - a lot mark





# Product testing

Screening

Optimisation

Commercialisation



# Product testing

Unit  
III



## Screening test



Examine the list of technical specification to optimise the product formulation.

## Optimisation test



Choose the right levels for each HOWs to optimise WHATs.

To confirm that the original WHATs have been achieved.  
To determine the overall acceptability of the product.



## Commercialisation test

Unit  
IV

# Screening test



16 samples were present (4 factors with % cow's yogurt, % kiwi, % sugar, % water at 2 levels with High & Low) to evaluate the sweetness, milk flavour, kiwi flavour, thickness and overall acceptability.



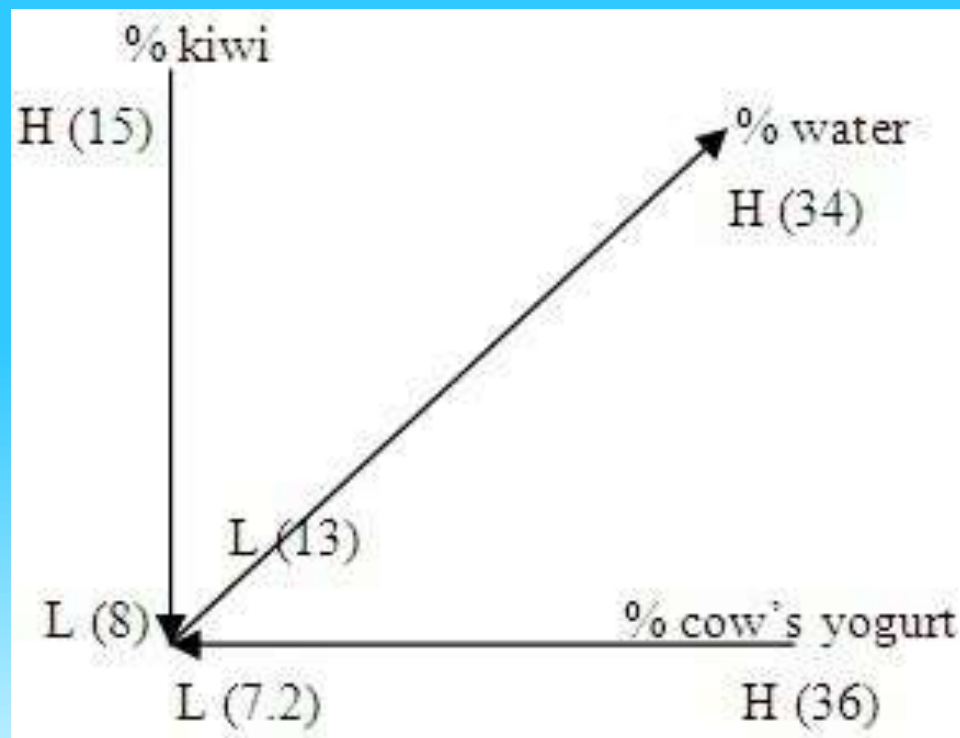


# Result of screening test



For all attributes & overall acceptability, assessors prefer: low kiwi %, low cow's yogurt %, high water %

Assessors response shows that the products with best sweetness are those with middle % of sugar





# Optimisation test



9 samples were presented (2 factors with % cow's yogurt, % kiwi at 3 levels with High, Medium & Low) to evaluate the sweetness, milk flavour, kiwi flavour, thickness and overall acceptability.





# Result of optimisation test



By comparing the 3D graphs for all attributes and overall acceptability, both of sample with high % cow's yogurt & low % kiwi and sample with low % cow's yogurt & high % kiwi are get similar mark, which are significant higher than other samples. So the 2 samples are chosen to do the commercial test.

## 2 best combination from optimization test

Ingredient	Cow's yoghurt(%)	Soya yoghurt(%)	Kiwi juice (%)	Sugar (%)	Water (%)
A	11	46.5	12	10.5	20
B	18	43.5	8	10.5	20

# Commercial test



Test 2 best combinations of the new product (A&B) and 2 main competitors' products(C&D).

Test for: sweetness, milk flavour, fruit flavour, thickness and overall acceptability



# Result of commercialisation test



For sweetness, thickness, fruit flavour and overall acceptability:

$A > B > D > C$

For milk flavour:

$B > A > D > C$

The overall mark of sample A is significant higher than C and D, and slightly higher than B, by consider the cost of A and B, A is lower than B. So A is chosen for the final product and shelf-life test.



# Conclusion



Sample A is chosen as the final product.

Ingredient	Cow's yoghurt(%)	Soya yoghurt(%)	Kiwi juice (%)	Sugar (%)	Water (%)
A	11	46.5	12	10.5	20





Shelf life  
Packaging  
GMP and GHP  
HACCP  
Quality control





# Shelf-life



# Shelf-life



- Determine intrinsic & extrinsic factors
- Propose methods for control & monitor shelf-life
- Propose adequate packaging
- Design & conduct shelf-life experiment





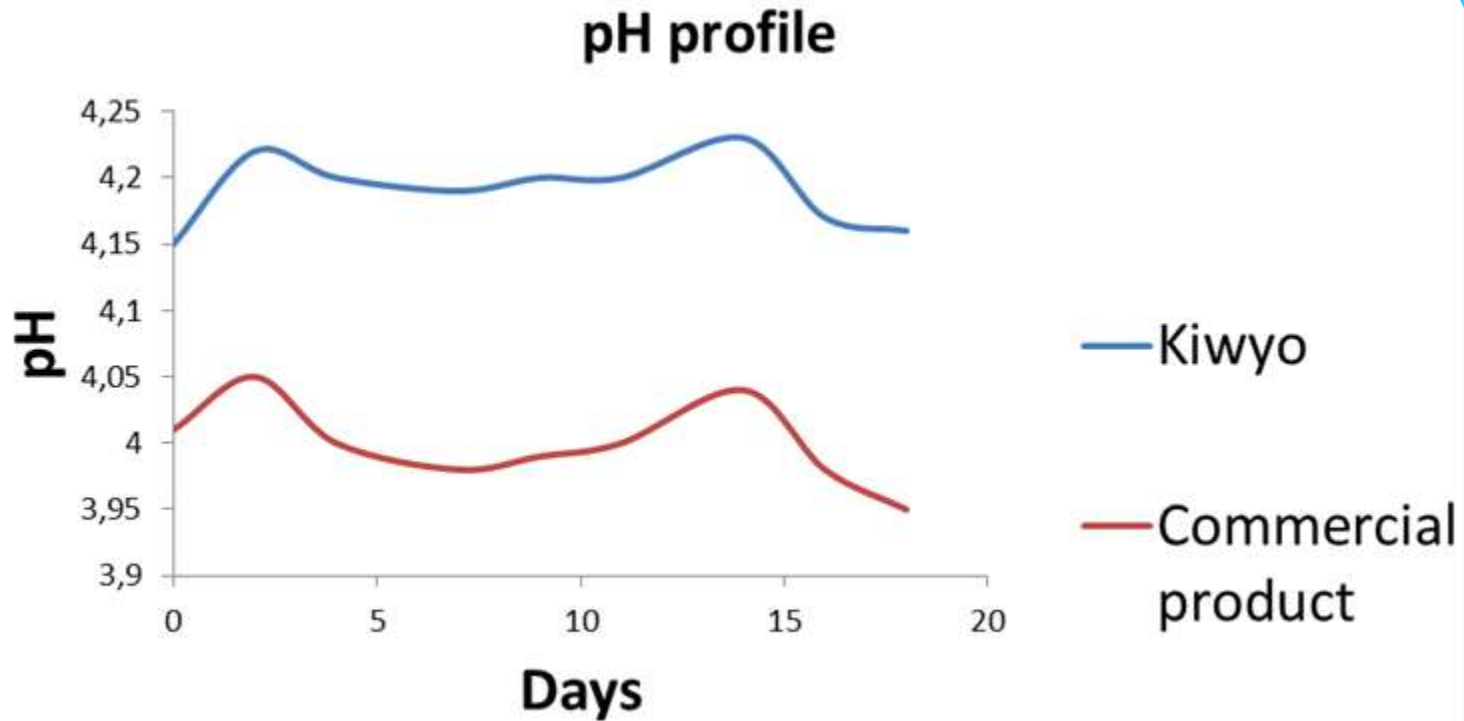
# Shelf-life experiment



- 2 products → 'Kiwyo & Commercial (Actimel' multifruit drinking yogurt)
- Sterilised glass bottles at 4°C
- Duration: 18 days
- pH & sensory evaluation- odour (14 subjects)  
→ every 2 days

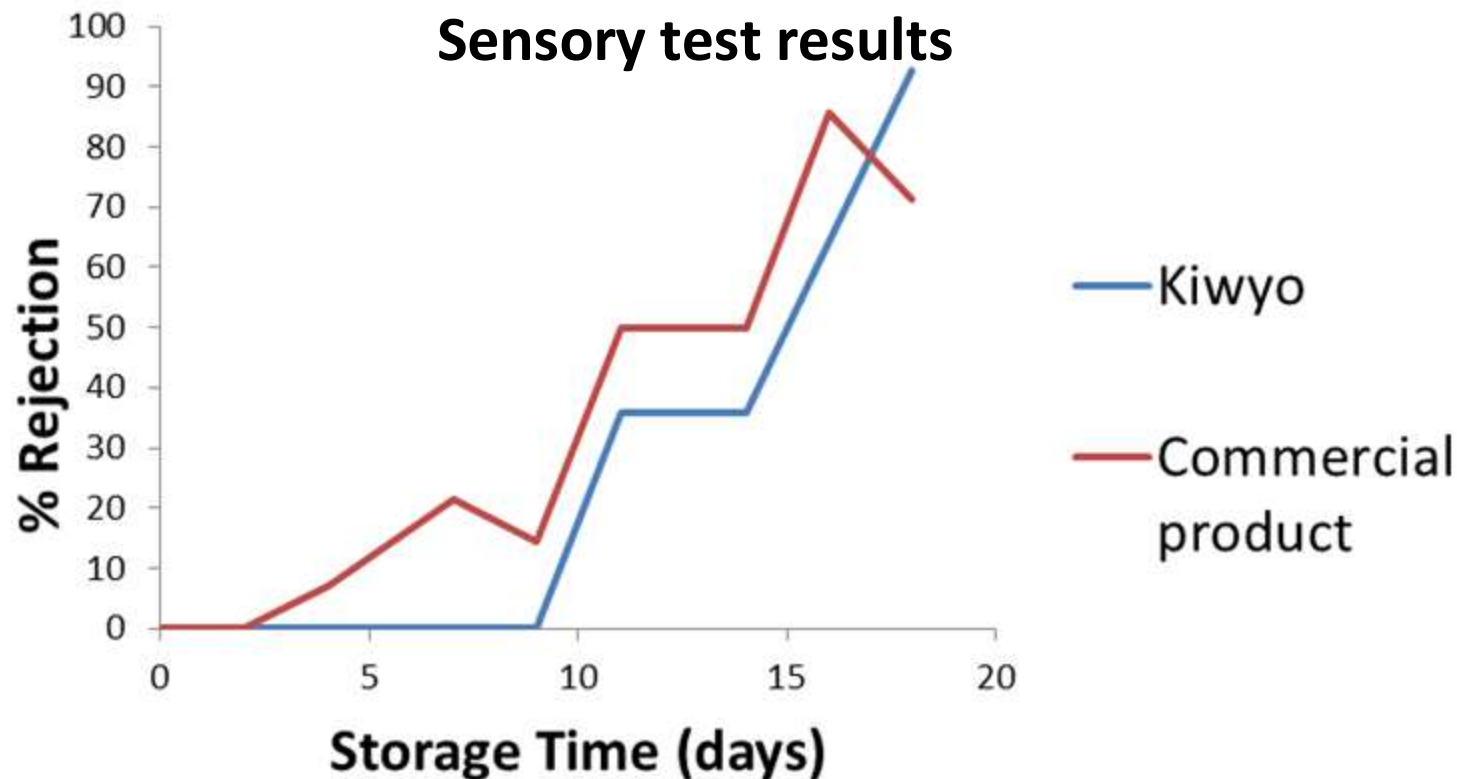


# Shelf-life experiment





# Shelf-life experiment



Storage Time (days)

0

2

10

12

20

# Shelf-life experiment results



## ***pH***

Shelf-life for:

➤ **Commercial**

between 9<sup>th</sup> & 11<sup>th</sup> day

***Vs***

➤ **'Kiwyo'**

between 11<sup>th</sup> & 14<sup>th</sup> day

## ***Sensory test***

Shelf-life for:

➤ **Commercial**

~11 days (average between 25% + 50% rejection probability)

**9 days less** in glass bottles than PET bottles (20 days)

➤ **'Kiwyo'**

~13 days (average between 25% + 50% rejection probability)

in the PET bottles → **9 days more**

➔ **22 days** (13 + 9 days)





# Packaging

# Packaging

Primary packaging



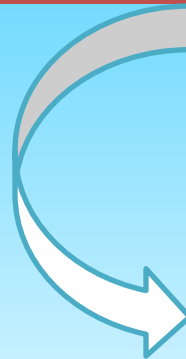
**PET bottles (250ml)**



Secondary packaging



**Paperboard laminated  
Cartons**



Tertiary packaging

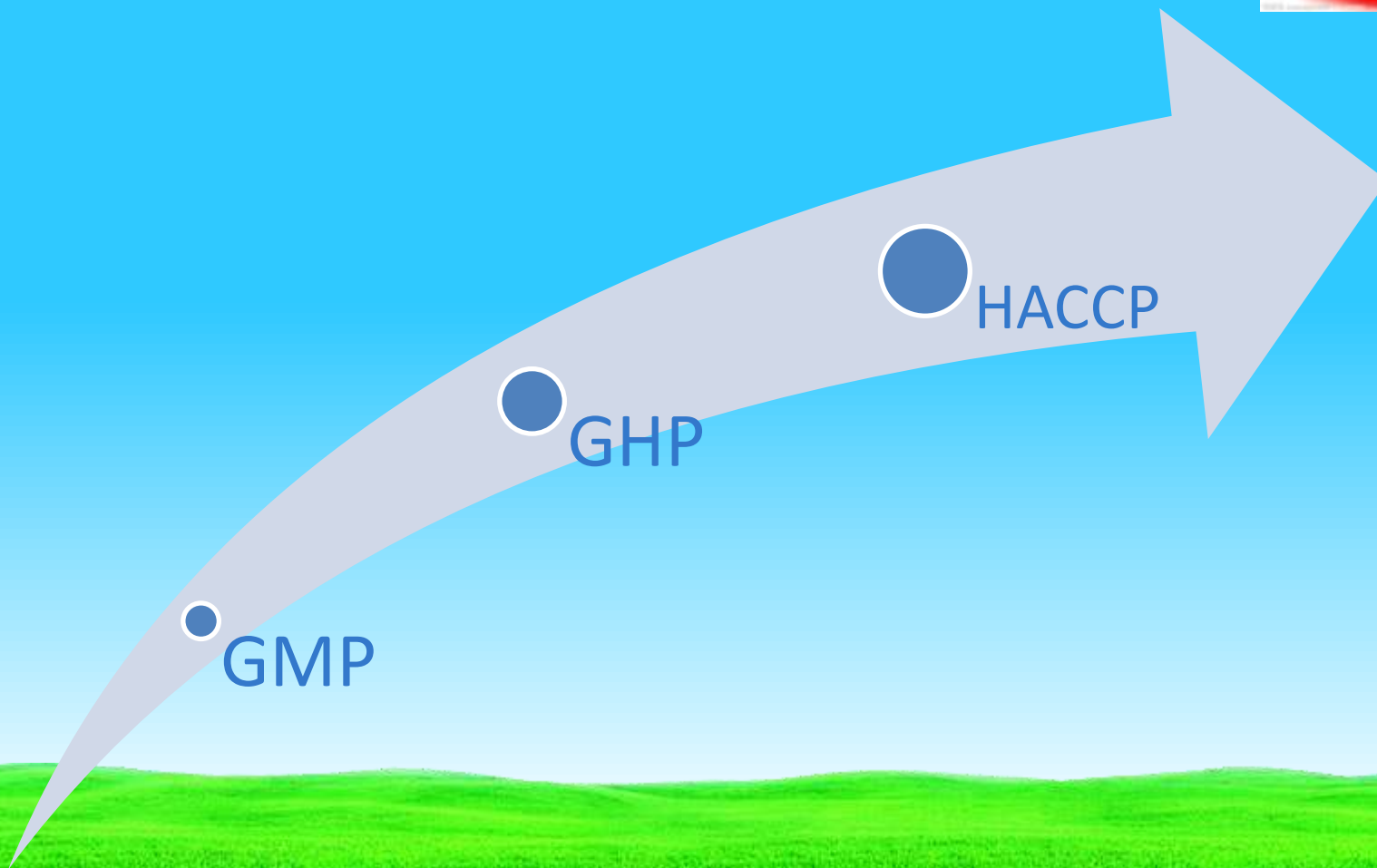


**Pallets / crates**





# GHP & GMP



# GHP & GMP



## **GMP**

- Location
- Layout
- Internal design
- Facilities
- Storage

## **GHP**

- Cleaning
- Personal hygiene



# HACCP



### Analyze Hazards

Potential hazards to the foods safety are recognized; in addition measures to regulate and control the hazards are identified.

### Identification of CCP's

Critical Control Points throughout the production process of the product are established.

### CCP Prevention Measures

A prevention measure is established at all CCP's: for example, minimal cooking time or temperature at a certain point in the product line.

### Monitoring of CCP Prevention Measures

A system is established to monitor prevention measures at a CCP: for ensample, a computer system would monitor and log the temperature.

### CCP Not Met

Establish a precaution when the CCP hasn't been met, for example, if the temperature is too low, the computer will alarm the batch to be destroyed.

### HACCP & CCP Log

Maintain a log system of all the CCP's; also, this would include records of CCP control methods and action taken to correct potential problems.





# Identify all potential hazards

## ➤ **Biological hazards**

- Pathogens: *E.coli*, *Cryptosporidium parvum*,  
*Staphylococcus aureus*, *Salmonella*

## ➤ **Chemical hazards**

- Toxins e.g. Patulin
- Agricultural chemicals e.g. Pesticides
- Toxic compounds e.g. lead, cleaning compounds

## ➤ **Physical hazards**

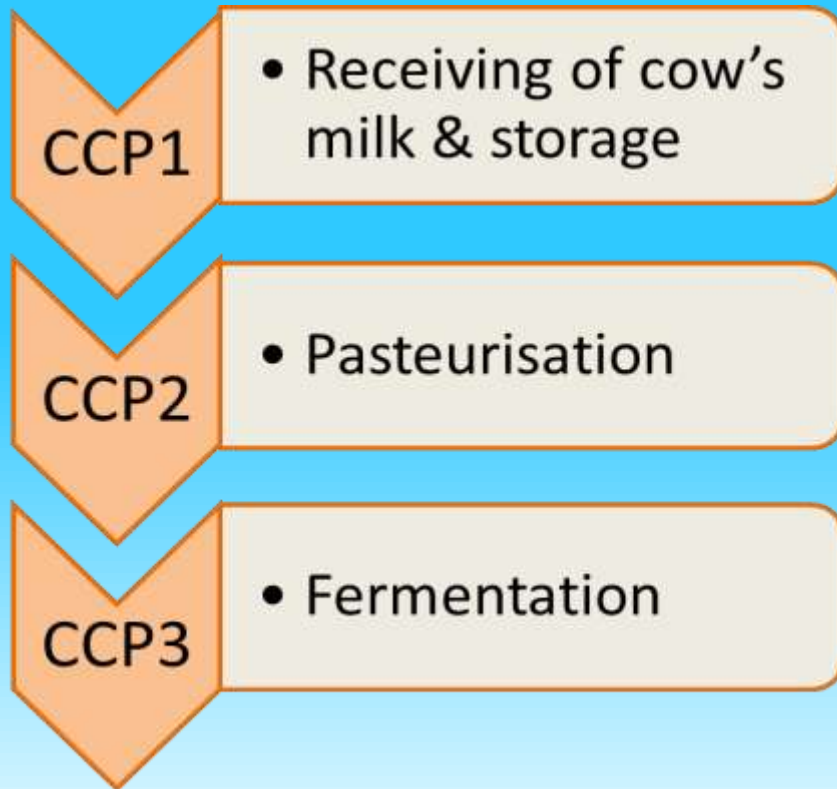
- Skin residuals
- Metal fragments



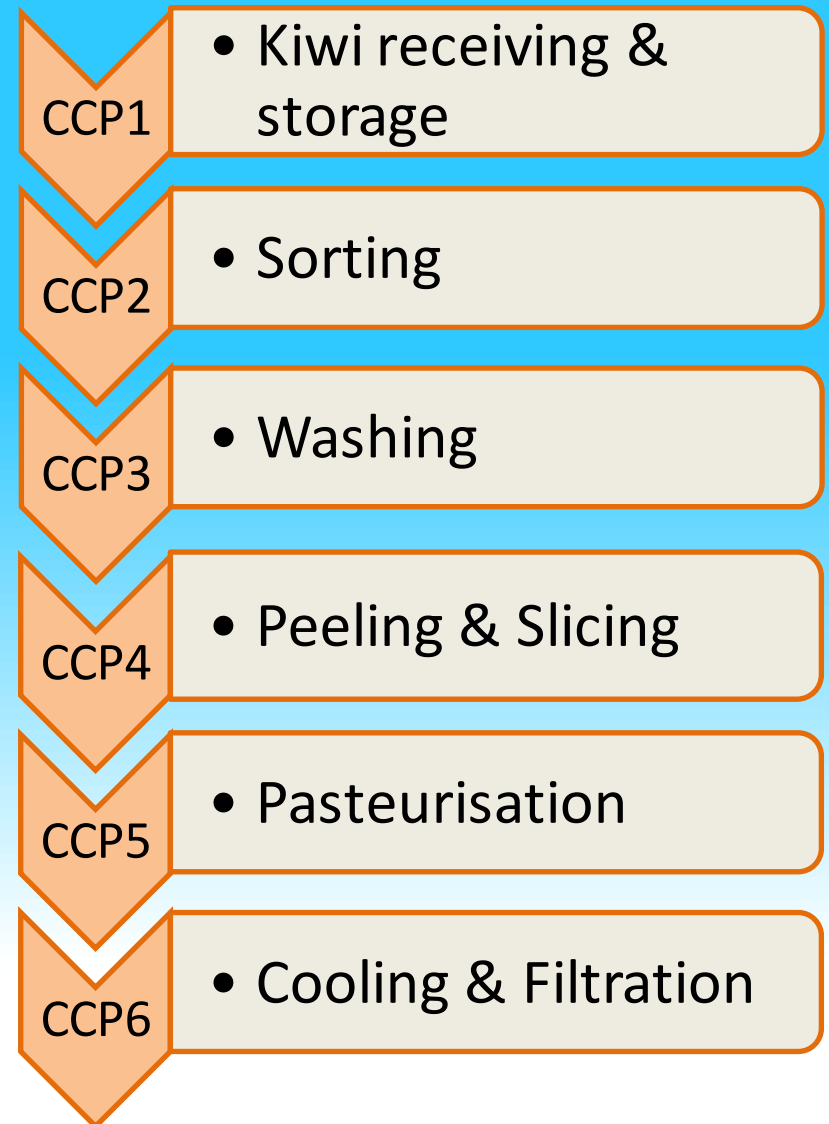
# Critical Control Points



## Yogurt Line



## Kiwi Juice Line





# Quality control



# Quality control



- Management of raw materials (Milk, Soya Milk, Kiwi, Water, Sugar, Starter cultures)
- Management of processing (Chemical compositions, Physical characteristics, Microbiological factors)
- Management of finished products (Sampling, Weight Specification, Equipment Check, Packaging Materials, Sensory Test)





# Marketing Product launch Summary



# Marketing and Launch strategies

➤ Marketing strategies

➤ Launch strategies



# Marketing strategies



## Marketing objective

- Launch the product in market and compete with existing brands
- Sell 500,000 units of 250mL within first 4 months
- Hold at least 5% shares of yogurt drink industry of UK





# Competitors' analysis



## Analysis of leading brands

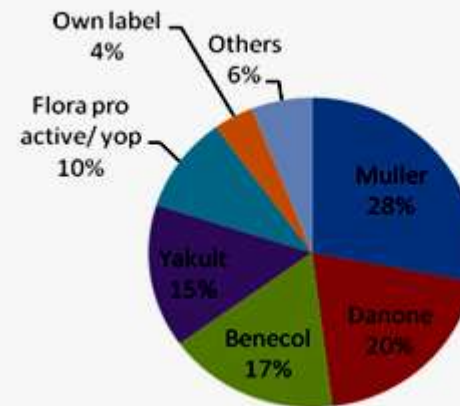
**Danone**

**Muller**

**McNeil**

**Yakult**

Figure 2. Marketing shares of the leading brands



**Brand**

Muller

Danone

McNeil

Yakult

Yoplait

Flora



**Yogurt drink**

Vitality

Activia

Danacol

Benecol

Yakult

Yop

Flora pro

# Marketing mixes



Marketing mix	
Product	Healthy soy yogurt drink with kiwi flavour, best option for snacks and breakfast, packed in 250 ml bottle, thirst quenching, refreshing
Price	Price is as same as existing leading brands except own label, £1/250ml, Launch price=80p/250ml. Our product is healthy, nutritious with different flavour of kiwi
Place	Available in all retailer supermarkets and small express shops of UK
Promotion	<ul style="list-style-type: none"> <li>-Create awareness among people about our new products, its uniqueness and healthy benefits. Strong promotion would desire them to buy product</li> <li>-Promotions will be done each after 2 weeks</li> <li>-Advertisement through news paper, radio, tv and handouts will be done for first 3 months from launch date</li> <li>-Discount offers such as buy one get one, save £1 when buy 2 packs will be given for first one month. Offers will be changed each after month</li> <li>-Free samples will be to people on roads, exhibitions, colleges, universities, outside supermarket for first 15 days</li> <li>-Advertisement through internet on different websites such as yahoo, facebook and our wikispaces website will be given through handouts for more information or online purchase. This will be done for whole year</li> </ul>

# SWOT analysis



## Strengths

- ☐ Unique
- ☐ No other soy yogurt drink in market
- ☐ Price is not high
- ☐ Healthy and nutritious
- ☐ No kiwi flavour in yogurt drink
- ☐ Eight people among ten consume yogurt drink as healthy product
- ☐ Good for people having lactose intolerance and allergic to milk

## Weakness

- ☐ New in market
- ☐ Some people are allergic to soy and kiwi
- ☐ Price is higher than own label yogurt drink
- ☐ Lack of shares and supermarket
- ☐ High capital cost
- ☐ Could be lack of professionalism due to new brand

## Opportunities

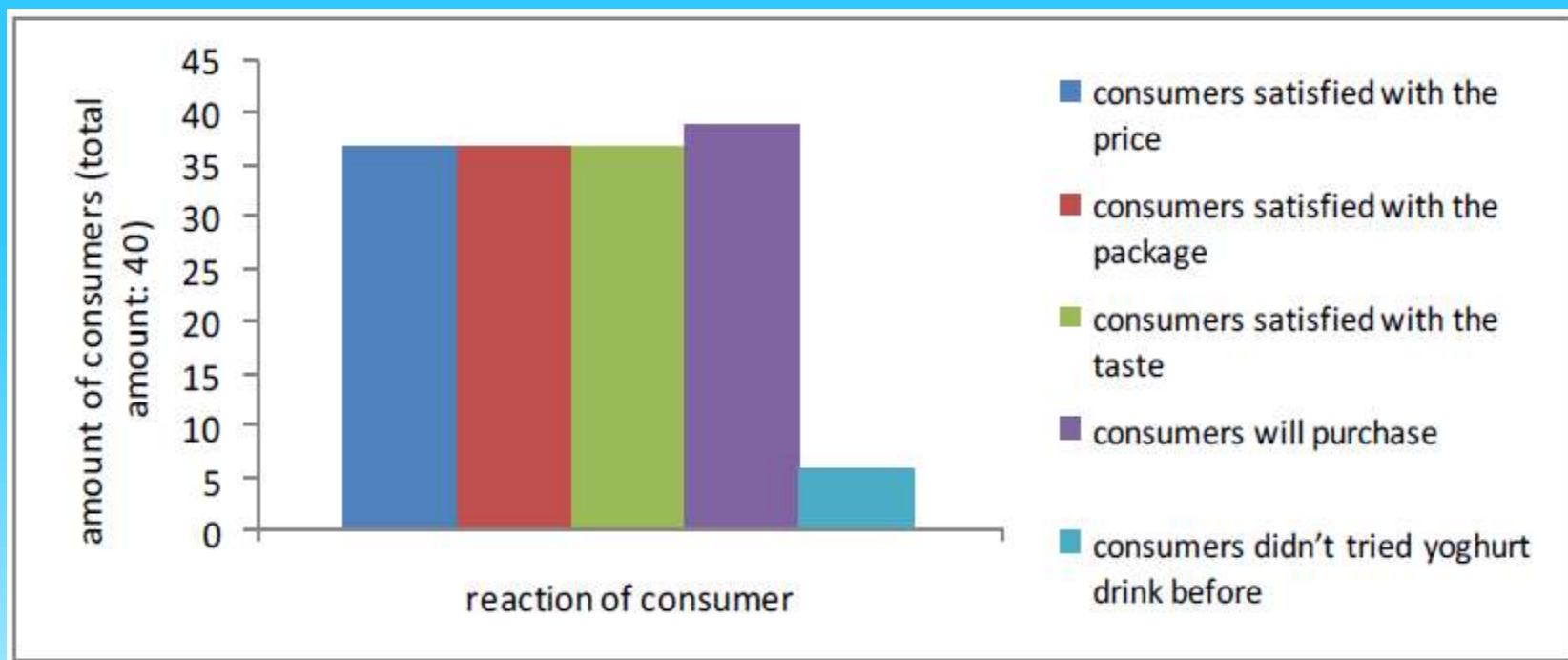
- ☐ Health conscious society would tend to consume as Kiwo is low fat and gives benefits from soy
- ☐ Many companies are cutting their spending so have chance to set up new brand
- ☐ Maintenance of quality of the product and good promotion will turn up the people to buy it
- ☐ Affordable for all classes of society
- ☐ Yogurt drink market has always been up rising in last 10 years

## Threats

- ☐ Recession in market
- ☐ Bad economic condition across globe
- ☐ Food inflation
- ☐ Unemployment among consumer
- ☐ Need to spend more on promotion
- ☐ Need to have more experienced system on resource management due to increasing prices of fuel and labour
- ☐ Existence of well known and renowned brands in market
- ☐ Loyalty of consumer to existing brands which they buy



# Product Test Launch Survey



# Launch strategies



Four stages of launch

➤ **Introduction**

➤ **Growth**

➤ **Maturity**

➤ **Decline**





# Launch strategies



- Market target
- Whole population
- Launch in the cities
- Internet launch
- Launch with the other famous brands





# Timing strategy



Time	July-August	September	October-November	December
Location	City center in different cities	Near schools and Universities	Supermarket	Christmas sale in markets
Strategies	Free samples send and survey collecting.  New product sell in supermarkets 2 for £ 1.80.	Free samples send.  Price of product rise to £ 1.	Multi pack offers: Buy 3 for the price 2	Half price



# After launch



## Brand building and packaging

- Track
- Recall
- Feedback
- Analysis



# Summary



- Idea of product development
- House of quality
- Industrial and laboratory processing
- Ancillary equipments
- Layout
- EU and National legislation
- Sensory experiments



# Summary



- Shelf life
- Packaging
- GMP, GHP, HACCP
- Quality control
- Marketing
- Product launch





Thank You!

